

WHAT IS CLAIMED IS:

1. A semiconductor laser device having an oscillation wavelength of larger than 760 nm and smaller than 800 nm in which at least a lower clad layer, a lower guide layer, an active region, an upper guide layer and an upper clad layer are supported by a GaAs substrate, the active region having a quantum well structure in which one or more well layers and barrier layers are stacked, wherein

said one or more well layers and said barrier layers are formed of any one of InGaP, InGaAsP and GaAsP, and

said upper and/or lower guide layer is formed of  $\text{Al}_z\text{Ga}_{1-z}\text{As}$  ( $0.20 < z \leq 1$ ).

2. The semiconductor laser device according to Claim 1, wherein

a value of  $z$  representing a mole fraction of Al in the group-III elements of said upper and/or lower guide layer is larger than 0.25.

3. The semiconductor laser device according to Claim 1, wherein

said upper and lower clad layers contain Al, and a value of  $z$  is smaller than a value of an Al mole fraction of said upper and lower clad layers.

4. The semiconductor laser device according to Claim 3, wherein

the value of  $z$  varies stepwise or continuously  
5 and in such a fashion as to increase with increasing  
nearness to said upper and lower clad layers.

5. The semiconductor laser device according to Claim 1, wherein

10 a value of  $z$  of at least a portion in contact  
with a barrier layer of said upper and/or lower guide layer  
is smaller than 0.4.

6. The semiconductor laser device according to Claim 1, wherein

15 said one or more well layers have a compressive  
strain.

7. The semiconductor laser device according to Claim 1, wherein

20 said barrier layers have a tensile strain.

8. An optical disk unit in which the semiconductor  
laser device as defined in Claim 1 is used as a light-  
25 emitting device.

9. A semiconductor laser device having an oscillation wavelength of larger than 760 nm and smaller than 800 nm in which at least a lower clad layer, an active region and an upper clad layer are supported by a GaAs substrate, the active region having a quantum well structure in which one or more well layers and barrier layers are stacked, wherein

said barrier layers are formed of an  $\text{In}_{1-x}\text{Ga}_x\text{As}_{1-y}\text{P}_y$  having a band gap energy larger than that of said well layers, and

there hold relationships that

$$0 < x \leq 1,$$

$$0.2 < y < 0.75, \text{ and}$$

$$|(a_2 - a_1)/a_1| \times 100 > 0.65,$$

where  $a_1$  is a lattice constant of said one or more well layers, and  $a_2$  is a lattice constant of said barrier layers.

10. The semiconductor laser device according to Claim 9, wherein

given that a lattice constant of the GaAs substrate is  $a_0$ , a value of  $(a_1 - a_0)/a_0$  is a positive value.

11. The semiconductor laser device according to Claim 9, wherein

no Al element is contained in said one or more well layers.

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12. The semiconductor laser device according to Claim 11, wherein

said one or more well layers are formed of InGaAsP.

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13. The semiconductor laser device according to Claim 9, wherein

any or every one of said barrier layers is in contact with an AlGaAs layer at a surface of the barrier layer opposite from a well layer.

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14. The semiconductor laser device according to Claim 13, wherein

the barrier layer in contact with the AlGaAs layer is an outermost layer in said active region.

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15. The semiconductor laser device according to Claim 13, wherein

a layer thickness of the barrier layer in contact with the AlGaAs layer is larger than 4 nm.

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16. The semiconductor laser device according to Claim 9, wherein

5 a value of  $x$  representing a mole fraction of Ga in the group-III elements of said barrier layers is smaller than 1.

17. The semiconductor laser device according to Claim 9, further comprising:

10 a guide layer formed of AlGaAs and placed between said active region and said upper and/or lower clad layer.

18. The semiconductor laser device according to Claim 9, wherein

15 said upper and/or lower clad layer is formed of AlGaAs.

19. The semiconductor laser device according to Claim 9, further comprising:

20 a guide layer formed of InGaP or InGaAsP and placed between said active region and said upper and/or lower clad layer, wherein

said upper and/or lower clad layer is formed of AlGaInP or InGaP.

20.           The semiconductor laser device according to Claim  
9, wherein

                  a value of  $y$  representing a mole fraction of P in  
the group-V elements of said barrier layers is larger than  
5   0.25.

21.           The semiconductor laser device according to Claim  
9, wherein

                  a value of  $y$  representing a mole fraction of P in  
10 the group-V elements of said barrier layers is smaller than  
0.6.

22.           An optical disk unit in which the semiconductor  
laser device as defined in Claim 9 is used as a light-  
15 emitting device.